

I-Chao Shen

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Research Interests

Computer graphics, vector graphics, data-driven 2D/3D geometry analysis and processing, machine learning.

Education

National Taiwan University **Taipei, Taiwan**
Ph.D. in Computer Science *Sep 2017 - Dec. 2020*
Advisor: Bing-Yu Chen.
Thesis: 2D Visual Content Design Driven by Human-Guided Optimization

National Taiwan University **Taipei, Taiwan**
Master in Information Management and MBA *Sep 2009 - June 2011*
Advisor: Bing-Yu Chen.
Thesis: Perspective-aware Warping for Seamless Stereoscopic Image Cloning

National Taiwan University **Taipei, Taiwan**
Bachelor in Information Management *Sep 2005 - June 2009*

Experiences

Assistant Professor, Tokyo, Japan *Apr. 2023 -*
Dept. of Computer Science, The University of Tokyo

Project Assistant Professor, Tokyo, Japan *Sep. 2022 - Mar. 2023*
Dept. of Creative Informatics, The University of Tokyo

Postdoctoral researcher - JSPS Foreign Researchers Fellowship, Tokyo, Japan *Dec. 2020 - Aug. 2022*
Host : Takeo Igarashi

Research Visitor - JST CREST Project, Tokyo, Japan *Feb 2018 - July 2018, Aug 2019*
Supervisor : Takeo Igarashi

Research Assistant - CMLab, National Taiwan University, Taipei, Taiwan *Apr 2017 - July 2017*
Supervisor : Bing-Yu Chen

Research Assistant - Imager Lab, The University of British Columbia,
Vancouver, Canada *Sep 2014 - Mar 2017*
Supervisor : Alla Sheffer

Research Intern - Imagination Lab, Adobe Research, San Jose, CA *May 2015 - Aug 2015*
Supervisor : Nathan Carr, Duygu Ceylan, Zhaowen Wang

Research Assistant - CITI, Academia Sinica, Taipei, Taiwan *Sep 2011 - July 2014*
Supervisor : Wen-Huang Cheng

Publications

GarmentImage: Raster Encoding of Garment Sewing Patterns with Diverse Topologies
Yuki Tatsukawa, Anran Qi, [I-Chao Shen](#), Takeo Igarashi
to appear in SIGGRAPH 2025 (Conference Track)

The Mokume Dataset and Inverse Modeling of Solid Wood Textures
Maria Larsson, Hodaka Yamaguchi, Ehsan Pajouheshgar, [I-Chao Shen](#), Kenji Tojo, Chia-Ming Chang, Lars Hansson, Olof Broman, Takashi Ijiri, Ariel Shamir, Wenzel Jakob, Takeo Igarashi

to appear in SIGGRAPH 2025 (Transaction on Graphics)

FontCraft: Multimodal Font Design Using Interactive Bayesian Optimization

Yuki Tatsukawa, I-Chao Shen, Mustafa Doga Dogan, Anran Qi, Yuki Koyama, Ariel Shamir, Takeo Igarashi
CHI 2025

CompAct: Designing Interconnected Compliant Mechanisms with Active Material Integration

Humphrey Yang, I-Chao Shen, Nikolas Martelaro, Bo Zhu, Haoran Xie, Takeo Igarashi, Lining Yao
CHI 2025

Approximating Procedural Models of 3D Shapes with Neural Networks

Ishtiaque Hossain, I-Chao Shen, Oliver van Kaick
Eurographics 2025

Interactive Multilayer Gaussian Garments for Low-Cost Try-On

Ryan Zesch, I-Chao Shen, Haoran Xie, Bo Zhu, Shinjiro Sueda, Takeo Igarashi
Graphics Interface (GI) 2025, conditionally accept

FontCLIP: A Semantic Typography Visual-Language Model for Multilingual Font Applications

Yuki Tatsukawa, I-Chao Shen, Anran Qi, Yuki Koyama, Takeo Igarashi, Ariel Shamir
Eurographics 2024

Learned Inference of Annual Ring Pattern of Solid Wood

Maria Larsson*, Takashi Ijiri*, I-Chao Shen, Hironori Yoshida, Ariel Shamir, Takeo Igarashi (*: joint first authors)
Computer Graphics Forum 2024

Virtual Measurement Garment for Per-Garment Virtual Try-On

Zaiqiang Wu, Jingyuan Liu, Long Hin Toby Chong, I-Chao Shen, Takeo Igarashi
Graphics Interface 2024

Improving Cache Placement for Efficient Cache-based Rendering

Yu-Ting Wu, I-Chao Shen
The Visual Computer 2024

StylePart: Image-based Shape Part Manipulation

I-Chao Shen, Li-Wen Su, Yu-Ting Wu, Bing-Yu Chen
The Visual Computer 2024

NeRF-In: Free-Form NeRF Inpainting with RGB-D Priors

I-Chao Shen*, Hao-Kang Liu*, Bing-Yu Chen (*: joint first authors)
IEEE Computer Graphics and Applications (CG&A) 2023

Palette-Based and Harmony-Guided Colorization for Vector Icons

Miao Lin*, I-Chao Shen*, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen (*: joint first authors)
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

Data-guided Authoring of Procedural Models of Shapes

Ishtiaque Hossain, I-Chao Shen, Takeo Igarashi, Oliver van Kaick
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

EvIcon: Designing High-Usability Icon with Human-in-the-loop Exploration and IconCLIP

I-Chao Shen, Fu-Yin Cherng, Takeo Igarashi, Wen-Chieh Lin, Bing-Yu Cheng
Computer Graphics Forum Volume 42, Issue 6, September 2023

360MVSNet: Deep Multi-view Stereo Network with 360° Images for Indoor Scene Reconstruction

Ching-Ya Chiu, Yu-Ting Wu, I-Chao Shen, Yung-Yu Chuang
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023 (Algorithm Track)

ClipGen: A Deep Generative Model for Clipart Vectorization and Synthesis

I-Chao Shen, Bing-Yu Chen

IEEE Transactions on Visualization and Computer Graphics (TVCG), pp. 4211-4224, vol. 28, Dec. 2022

StyleFaceUV: a 3D Face UV Map Generator for View-Consistent Face Image Synthesis

Wei-Chieh Chung, Jian-Kai Zhu, I-Chao Shen, Yu-Ting Wu, Yung-Yu Chuang

The British Machine Vision Conference (BMVC) 2022

ODEN: Live Programming for Neural Network Architecture Editing

Chunqi Zhao, I-Chao Shen, Tsukasa Fukusato, Jun Kato, Takeo Igarashi

Proceeding of ACM Intelligent User Interfaces (IUI) 2022

Per Garment Capture and Synthesis for Real-time Virtual Try-on

Toby Chong, I-Chao Shen, Nobuyuki Umetani, Takeo Igarashi

Proceeding of User Interface Software and Technology (UIST) 2021

Data-driven Sketch Beautification with Neural Feature Representation

I-Chao Shen

IEEE Computer Graphics and Applications (CG&A) 2021

Multi-Resolution Shared Representative Filtering for Real-Time Depth Completion

Yu-Ting Wu, Tzu-Mao Li, I-Chao Shen, Hong-Shiang Lin, Yung-Yu Chuang

High-Performance Graphics (HPG) 2021

ClipFlip : Multi-view Clipart Design

I-Chao Shen, Kuan-Hung Liu, Li-Wen Su, Yu-Ting Wu, and Bing-Yu Chen

Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:2008.12933 [cs.GR]

Interactive Optimization of Generative Image Modeling using Sequential Subspace Search and Content-based Guidance

Toby Chong Long Hin*, I-Chao Shen*, Issei Sato, and Takeo Igarashi (*: joint first authors)

Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:1906.09840 [cs.GR]

ZomeFab: Cost-effective Hybrid Fabrication with Zometools

I-Chao Shen, Ming-Shiuan Chen, Chun-Kai Huang, and Bing-Yu Chen

Computer Graphics Forum, Volume 39, Issue 1, Feb 2020

Director-360: Introducing Camera Handling to 360 Cameras

Hao-Juan Huang, I-Chao Shen, and Liwei Chan

in proceeding of MobileHCI 2020

Perception-Driven Semi-Structured Boundary Vectorization

Shayan Hoshyari, Edoardo Dominici, Alla Sheffer, Nathan Carr, Duygu Ceylan, Zhaowen Wang, I-Chao Shen

ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018).

High-resolution 360 Video Foveated Stitching for Real-time VR

Wei-Tse Lee*, Hsin-I Chen*, Ming-Shiuan Chen, I-Chao Shen and Bing-Yu Chen

Computer Graphics Forum (Proceedings of Pacific Graphics 2017)

A Scalable Active Framework for Region Annotation in 3D Shape Collections

Li Yi, Vladimir G. Kim, Duygu Ceylan, I-Chao Shen, Mengyan Yan, Hao Su, Cewu Lu, Qixing Huang, Alla Sheffer, and Leonidas Guibas

ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2016)

Retargeting 3D Objects and Scenes with a General Framework

Chun-Kai Huang, Yi-Ling Chen, I-Chao Shen, and Bing-Yu Chen

Computer Graphics Forum (Proceedings of Pacific Graphics 2016)

Data-driven Handwriting Synthesis in a Conjoined Manner

Hsin-Yi Chen, Tse-Ju Lin, I-Chao Shen, and Bing-Yu Chen

Computer Graphics Forum (Proceedings of Pacific Graphics 2015)

Gestalt Rule Feature Points

I-Chao Shen and Wen-Huang Cheng

IEEE Transactions on Multimedia (TMM), 17(4), pp. 526-537, 2015

Geometrically Consistent Stereoscopic Image Editing using Patch-based Synthesis

Sheng-Jie Luo, Ying-Tse Sun, I-Chao Shen, Bing-Yu Chen, and Yung-Yu Chuang

IEEE Transactions on Visualization and Computer Graphics (TVCG), 21(1), pp. 56-67, 2015

Stroke-guided Image Synthesis for Skeletal Structure Editing

Sheng-Jie Luo, Chin-Yu Lin, I-Chao Shen, and Bing-Yu Chen

Computer Graphics Forum (Proceedings of Pacific Graphics 2013)

Perspective-Aware Warping for Seamless Stereoscopic Image Cloning

Sheng-Jie Luo, I-Chao Shen, Bing-Yu Chen, Wen-Huang Cheng, and Yung-Yu Chuang

ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2012).

Technical Reports and Preprints

AutoSketch: VLM-assisted Style-Aware Vector Sketch Completion

Hsiao-Yuan Chin*, I-Chao Shen*, Yi-Ting Chiu, Bing-Yu Chen (*: joint first authors)

arxiv preprint ([arxiv:2502.06860](https://arxiv.org/abs/2502.06860))

AvatarPerfect: User-Assisted 3D Gaussian Splatting Avatar Refinement with Automatic Pose Suggestion

Jotaro Sakamiya, I-Chao Shen, Jinsong Zhang, Mustafa Doga Dogan, Takeo Igarashi

arxiv preprint ([arxiv:2412.1560](https://arxiv.org/abs/2412.1560))

AutoPoly: Predicting an Artist-Compatible Polygonal Mesh Construction Sequence from a Silhouette Image

I-Chao Shen, Yu Ju Chen, Oliver van Kaick, Takeo Igarashi

arxiv preprint ([arxiv:2203.15233](https://arxiv.org/abs/2203.15233))

Workshop Papers, Short Papers, Posters

Designing Reconfigurable Joints

Atsushi Maruyama, Maria Larsson, I-Chao Shen, Takeo Igarashi

SIGGRAPH ASIA 2024 Technical Communication (Honorable Mention Award)

DualAvatar: Robust Gaussian Splatting Avatar with Dual Representation

Jinsong Zhang, I-Chao Shen, Jotaro Sakamiya, Yu-Kun Lai, Takeo Igarashi, Kun Li

SIGGRAPH ASIA 2024 Poster Program

Generating Font Variations Using Latent Space Trajectory

Sotaro Kanazawa, I-Chao Shen, Yuki Tatsukawa, Takeo Igarashi

SIGGRAPH ASIA 2024 Poster Program

3D Reconstruction from Sketch with Hidden Lines by Two-Branch Diffusion Model

Yuta Fukushima, Anran Qi, I-Chao Shen, Yulia Gryaditskaya, Takeo Igarashi

Eurographics 2024 Short Paper

MicroGlam: Microscopic Skin Image Dataset with Cosmetics

Toby Chong, Alina Chadwick, I-Chao Shen, Haoran Xie, Takeo Igarashi

SIGGRAPH ASIA 2023 Technical Communication

Computational Design of Nebuta-like Paper-on-Wire Artworks

Naoki Agata, Anran Qi, Yuta Noma, I-Chao Shen, Takeo Igarashi

SIGGRAPH 2023 Poster Program

Palette-Based Colorization for Vector Icons

Miao Lin, I-Chao Shen, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen

SIGGRAPH 2023 Poster Program

OVERPAINT: Automatic Multi-Layer Stencil Generation without Bridges

Yuta Fukushima, Anran Qi, [I-Chao Shen](#), Takeo Igarashi
SIGGRAPH ASIA 2022 Technical Communication

Guided Image Weathering using Image-to-Image Translation

Li-Yu Chen, [I-Chao Shen](#), and Bing-Yu Chen
SIGGRAPH ASIA 2021 Technical Communication

Real-time Image-based Virtual Try-on with Measurement Garment

Toby Chong, [I-Chao Shen](#), Yunfei Qian, Nobuyuki Umetani, Takeo Igarashi
SIGGRAPH ASIA 2021 Emerging Technologies

Transferring Deep Reinforcement Learning with Adversarial Objective and Augmentation

[I-Chao Shen](#), Shu-Hsuan Hsu, and Bing-Yu Chen
IJCAI-PRICAI 2020 Workshop on Knowledge-Based Reinforcement Learning (KBRL)

Large-scale fabrication with interior zometool structure

Ming-Shiuan Chen, [I-Chao Shen](#), Chun-Kai Huang, and Bing-Yu Chen
ACM SIGGRAPH Poster Program 2018

A Deep Learning Based Method For 3D Human Pose Estimation From 2D Fisheye Images

Ching-Chun Chen, Chia-Min Wu, [I-Chao Shen](#), and Bing-Yu Chen.
ACM IUI Poster Program 2018

Retargeting 3D objects and scenes

Chun-Kai Huang, Yi-Ling Chen, [I-Chao Shen](#), and Bing-Yu Chen
ACM SIGGRAPH Poster Program 2015

Painting Photolization

Chien-Wen Jung, [I-Chao Shen](#), Sheng-Jie Luo, Bing-Yu Chen, and Wen-Huang Cheng
ACM SIGGRAPH ASIA Poster Program 2013

Texturing and Deforming Meshes with Casual Images

[I-Chao Shen](#), Yi-Hua Wang, Yu-Mei Chen, Bing-Yu Chen, and Wen-Huang Cheng
ACM SIGGRAPH ASIA Poster Program 2012

User-Assisted Disparity Maps

Hsin-Yi Chen, Yi-Shan Lin, [I-Chao Shen](#), Sheng-Jie Luo, Wen-Huang Cheng and Bing-Yu Chen
Pacific Graphics 2012 short paper

MusicSpace: You “Play” The Music

Chun-Yu Tsai, Hung-Jung Lin, Tzu-Hao Kuo, Kai-Yin Cheng, [I-Chao Shen](#) Bing-Yu Chen, and Rung-Huei Liang
ACM SIGGRAPH Poster Program 2010

Patent**Smoothing images using machine learning**

Nathan A Carr, Zhaowen Wang, Duygu Ceylan, [I-Chao Shen](#)
United States Patent, No. 9799102, issued October 24, 2017.

Grants

| | |
|---|--------------------|
| JSPS Kakenhi Grant-in-Aid for Young Scientists, Japan | <i>2023 - 2028</i> |
| AIP Challenge Researcher, Japan Science and Technology Agency (JST), Japan. | <i>2021 - 2022</i> |
| JSPS Grant-in-Aid for Scientific Research for JPSP foreign fellow, Japan. | <i>2021 - 2023</i> |

Honors

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|---|-------------|
| IPPR Best Ph.D. dissertation award, Honorable mention | 2021 |
| JSPS Postdoctoral Fellowship for Foreign Researchers | 2020 - 2022 |
| MediaTek Fellowship | 2017 - 2020 |

Invited Talks

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| Tailored Computational Visual Content Creation, <i>ISID (International Symposium on Intelligence Design) 2024</i> | Mar. 2024 |
| Tailored Computational Visual Content Creation, <i>BAI Research Seminar, Institute for AI and Beyond, The University of Tokyo</i> | Feb. 2024 |
| Computer Graphics around you everyday and how to become a Computer Graphics researcher, <i>Chikushigaoka High School, Fukuoka, Japan</i> | July. 2022 |
| Computer Graphics around you everyday and how to become a Computer Graphics researcher, <i>Tokyo Metropolitan Tama High School of Science and Technology, Tokyo, Japan</i> JSPS science dialogue program | July. 2022 |
| Per Garment Capture and Synthesis for Real-time Virtual Try-on, <i>JST CREST 8th Research Area Meeting</i> | Sep. 2021 |
| 2D Visual Content Design Driven by Human-Guided Optimization, <i>The University of Tokyo, Tokyo, Japan</i> | Apr. 2021 |

Media

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|---|------------|
| Per Garment Capture and Synthesis for Real-time Virtual Try-on | 2021, 2022 |
| - BS フジ - ガリレオ X 第 259 回「現実空間 × 仮想空間二つの世界を重ねる最新技術」(JP) | |
| - JST News | |
| - NIKKEI (JP) | |
| - ZAIKEI (JP) | |
| - TechCrunch Japan (JP) | |
| - Tii 技術情報 (JP) | |
| - Independent TV (UK) | |

Professional Services

- **Technical Paper Committee and others:**
 - SIGGRAPH ASIA Technical Papers Committee (2025)
 - Pacific Graphics International Program Committee (IPC) (2025)
 - Eurographics Short Papers International Program Committee (IPC) (2025)
 - SIGGRAPH Technical Papers COI Coordinator (2025) [\[link\]](#)
 - SIGGRAPH ASIA Technical Papers Committee (2024) [\[link\]](#)
 - AAAI (2023 [\[link\]](#), 2024 [\[link\]](#), 2025 [\[link\]](#))
- **Reviewer:**
 - SIGGRAPH, SIGGRAPH ASIA
 - NeurIPS, ICLR, ICML
 - Eurographics
 - CHI
 - Pacific Graphics
 - WACV
 - BMVC
 - Transaction on Multimedia (TMM)
 - Transaction on Visualization and Computer Graphics (TVCG)

References

Takeo Igarashi

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Bing-Yu Chen

Professor in Department of Computer Science and Engineering / Information Management, National Taiwan University

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